



SDMS Doc ID 2000772

The Boeing Company  
Rocketdyne Propulsion & Power  
6633 Canoga Avenue  
P.O. Box 7922  
Canoga Park, CA 91309-7922

2000772

CERTIFIED MAIL

August 18, 2000  
In reply refer to 2000RC3428

Gerard Abrams  
Calif. Environmental Protection Agency  
Dept. of Toxic Substances Control  
Region 1  
Facility Permitting Branch  
10151 Croydon Way, Suite 3  
Sacramento Ca 95827-2106

Subject: Santa Susana Field Laboratory Corrective Action Program Quarterly  
Progress Reports for EPA ID Numbers CAD093365435 (Rocketdyne),  
CA1800090010 (NASA) and CAD000629972 (DOE)

Dear Mr. Abrams:

The Boeing Company., Rocketdyne Propulsion and Power (Rocketdyne) has enclosed the following progress reports as required by Hazardous Waste Facility Post-Closure Permits for Rocketdyne and NASA at the Santa Susana Field Laboratory (SSFL). In addition, Rocketdyne has included a progress report for the DOE Corrective Action sites in Area IV. Rocketdyne has submitted the reports in the format as it appears in Attachment I of the Rocketdyne and NASA permits. This reporting period is from May 16, 2000 through August 15, 2000.

Should you have any comments, please do not hesitate to let me know. I can be reached at (818) 586-5695.

Sincerely,



Art Lenox  
Environmental Remediation

AJL:bc  
Enclosures



G. Abrams (2000RC3428)  
August 18, 2000  
Page 2

cc: A. Elliott/NASA (with enclosures)  
D. Hambrick/Ogden (with enclosures)  
R. McJunkin/DTSC (with enclosures)  
C. Bonds/DTSC (with enclosures)  
S. Baxter/DTSC (with enclosures)  
P. Batarseh/DTSC (with enclosures)  
P. Bailey/DTSC (with enclosures)  
K. Baker/DTSC (with enclosures)  
M. Lopez/DOE/OAK (with enclosures)  
T. Kelly/EPA (with enclosures) ✓  
Committee to Bridge the Gap (with enclosures)  
R. Marshall/CSUN, Oviatt Library (with enclosures)  
J. Weaver/Simi Valley Library (with enclosures)  
J. Metzler/LA Public Library, Platt Branch (with enclosures)

(SHEA-090853)



**Santa Susana Field Laboratory**  
**RFI and CMS Projects**  
**Quarterly Progress Report**  
**EPA ID No. CAD000629972 (Department of Energy)**

Rocketdyne Project Manager:  
Ogden Project Manager:  
Report Period:

Art Lenox  
Dixie Hambrick  
May 16 – August 15, 2000

## **1. PROGRESS MADE THIS REPORT PERIOD**

Ogden began an extended field sampling effort this period based on DTSC's comprehensive RFI review. Soil vapor and soil matrix sampling at RFI sites began June 28, 2000 and is currently in progress. Ogden collected 6 RFI samples at DOE sites during this reporting period (Table 1). DTSC was onsite during most of the field sampling activities conducted to date to observe sampling protocols and select sampling locations and depths. Soil vapor analysis is being conducted onsite by a mobile laboratory provided by Hydrogeospectrum/Centrum Analytical Laboratories. Soil matrix sample analysis is being conducted by Ceimic Laboratories, located in Rhode Island. To date, approximately 22 soil vapor (22 analyses) and 169 soil matrix samples (532 analyses) have been collected from DOE locations during the RFI program (Table 2).

DTSC, Rocketdyne, and Ogden met several times this period at the SSFL to review results of the RFI sampling, discuss shallow groundwater characterization, observe field sampling activities, and collect split samples. Meetings and site visits were conducted on May 18, 22, 25, and 26; June 2, 8, 9, 14, and 26; July 6, 7, 10, 11, 13, 14, 18, 19, 20, 21, 24, 25, 26, and 28; and August 1, 3, 4, 9, and 10. These meetings are part of an ongoing, comprehensive review process with DTSC to describe site activities, soil and groundwater sampling results, and review findings at each Solid Waste Management Unit (SWMU) and Area of Concern (AOC) at the SSFL. This review includes SWMUs and AOCs identified in the 1996 RFI Work Plan and its amendments, the 1994 RCRA Facility Assessment Report, and the 1997 USEPA aerial photographic review. DOE sites reviewed to date include:

- SWMU 7.1 – Building 56 Landfill/Excavation
- SWMU 7.4 – Old Conservation Yard
- SWMU 7.5 – Building 100 Trench
- SWMU 7.7 – Building 20, Rockwell International Hot Lab
- Area IV AOC – SE Drum Storage Yard
- Area IV AOC – Building 59, Systems for Nuclear Auxiliary Power
- Area IV AOC – Building 65, Metals Laboratory Clarifier
- Area IV AOC – Area IV Former Hazardous Materials Storage Area
- Area IV AOC – Building 009 Leach Field

RFI Quarterly Progress Report  
EPA No. CAD000629972 (Area IV)  
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- Area IV AOC – Building 010 Leach Field
- Area IV AOC – Building 021 Leach Field
- Area IV AOC – Building 030 Leach Field
- Area IV AOC – Building 064 Leach Field
- Area IV AOC – Building 093 Leach Field
- Area IV AOC – Building 353 Leach Field
- Area IV AOC – Building 363 Leach Field
- Area IV AOC – Building 373 Leach Field and Underground Tank UT-72
- Area IV AOC – Building 383 Leach Field

Proposed removal of construction debris, metal, and possible asbestos-containing materials in a small portion of the Old Conservation Yard (SWMU 7.4) site is on hold pending DTSC approval.

Work continued on the Former Sodium Disposal Facility (FSDF) Interim Measures this period. Sediment removal activities continue in the FSDF channels and excavation began in the former pond areas. DTSC was onsite to observe removal activities and select sampling locations and depths. Approximately 10,000 tons of soil and upper weathered bedrock have been excavated to date. Excavated soils from the FSDF are being stored in covered bins onsite. Confirmation sampling is in progress.

The draft RFI work plan addendum amendment (WPAA) was prepared and reviewed by DTSC. The draft WPAA was revised based on DTSC's comments and provided for DTSC's approval prior to beginning field work June 28, 2000.

A preliminary draft Shallow Zone Groundwater Investigation Work Plan was prepared by Ogden and discussed with DTSC on June 28, 2000. Additional meetings to finalize the scope of the investigation are ongoing.

The final draft of the Surficial Media Operable Unit SRAM Work Plan was approved by DTSC June 5, 2000. Work began preparing an outline for the Chatsworth Formation Operable Unit SRAM. A meeting was held with DTSC risk assessors and chemists on July 21, 2000 to discuss the scope of interim RFI data deliverables for review.

Implementation of the Ecological Validation Sampling and Analysis Plan (SAP) began this period. Ecological samples were not collected at DOE sites. As part of this program, however, one soil sample was collected for PCB congener analysis at the Old Conservation Yard (SWMU 7.4) DOE site to support human health and ecological risk assessments. Ecological validation samples are included in the sampling summaries provided in Tables 1 and 2.

## **2. SUMMARY OF FINDINGS**

Perchlorate was not detected in the surface water (seep) samples collected in the FSDF channels (SWMU 7.3) last period. Preliminary results for soil and/or sediment samples collected this period from DOE sites have not been received.

## **3/4 SUMMARY OF PROBLEMS/ACTIONS TAKEN**

Boeing is continuing to monitor the State of Arizona audit evaluation of the Columbia Analytical Services (CAS) laboratory. CAS has provided analytical support for the RFI. Boeing, Ogden, and DTSC's Hazardous Materials Laboratory met on July 21, 2000 to discuss preliminary CAS audit findings and implications for the RFI. Further discussion of potential corrective actions is pending completion of the audit.

## **5. PROJECT ACTIVITY NEXT PERIOD**

Boeing will be involved with the following RFI activities during the next period:

- Continue comprehensive review of all SWMUs and AOCs with DTSC, including review of the USEPA Aerial Report findings, historical and preliminary RFI soil data, groundwater data, and conducting visits to inspect site conditions
- Conduct RFI site sampling
- Review ecological sample results
- Prepare Shallow Zone Groundwater Investigation RFI Work Plan Amendment and implement field work
- Discuss program quality assurance and laboratory performance with DTSC
- Discuss RFI report outline with DTSC
- Begin preliminary risk and data deliverables for DTSC review
- Complete FSDF Interim Measures activities

## **6. PERSONNEL CHANGES**

None.

## **7. SUMMARY OF CONTACTS**

None.

RFI Quarterly Progress Report  
EPA No. CAD000629972 (Area IV)  
May 16 – August 15, 2000

**8. TREATMENT SYSTEM EFFECTIVENESS**

No soil remediation treatment systems are in place or operational at this time.

**9. DATA REPORTS SUBMITTED**

RFI Work Plan Addendum Amendment, Santa Susana Field Laboratory, Ventura County, California. *DTSC Review Copy*. (Ogden, May 2000).

Table 1  
DOE Sampling Summary  
May 16 - August 15, 2000

UNIT	Facility	MATRIX	Total Samples	Total Analyses	VOC, 8260B - vapor	VOC, 8260B	TPH, 8015/BM	SVOC, 8270CSIM	SVOC, 8270C	Metals, 6010B/7471A	Mercury, 7471A	Silver, 7761	Hex. Cr, 7196A	Flouride, 340.2	ANIONS, 300	PH, 9040B	PH, 9045C	PCBs, 8082	PCBs, 1668	Perchlorate, 300M	Dioxin, 8290	Dioxin, 1613B	Ordnance, SW8330	LIPIDS	TOC
AREA IV AOC	Metals Clarifier	S	2	3	0	0	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AREA IV AOC	Metals Clarifier	V	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AREA IV AOC	Haz. Storage	V	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWMU 7.4	Old Conservation	S	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0
SWMU 7.5	B100	V	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>TOTAL</b>			<b>6</b>	<b>8</b>	<b>3</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
S = Soil	V = Vapor																								
W = Water	B = Biota																								
Note - includes QA samples (water, soil, vapor); does not include samples on hold.																									

Table 2  
RFI Sampling Summary  
May 1996 - August 2000

RFI Soil Matrix Sampling Analysis Summary																											
OWNER/OPERATOR	Total Samples	Total Analyses	VOA, 8260	TPH, 8015	VOA, 8021A	SVOA, 8270SIM	SVOA, 8270	Metals, 6010/700	Mercury, 7471A	Silver, 7761	Hex Cr, 7196	Flouride, 340.2	ANIONS, 300	PH, 9040/9045	PCBs, 8080/8082	PCBs, 1668	Form, ASTM D19	Perchlorate, 300M	Tributyl Sn	Dioxin, 8290	Dioxin, 1613B	Hydrazine	Ordinance, 8330	SPLP, 1312	Asbestos	LIPIDS	TOC
DOE	169	532	2	97	50	56	10	94	0	0	2	17	7	77	25	1	0	28	0	35	0	0	0	6	25	0	0
NASA	586	932	28	335	153	74	18	111	0	0	10	10	10	55	37	8	16	0	0	47	11	0	1	5	0	0	3
Rocketdyne	1231	2518	71	490	323	285	44	399	4	1	42	87	84	323	41	9	95	61	1	41	5	7	61	39	0	1	4
Total	1986	3982	101	922	526	415	72	604	4	1	54	114	101	455	103	18	111	89	1	123	16	7	62	50	25	1	7
Notes:																											
Soil, water only - no vapor		No Eco Samples																									
No Task 203 samples (LUFT)		No background samples																									
No Bell Canyon samples		No samples on hold																									
Includes all Ogden samples at RFI sites - June 96 thru present																											
RFI Soil Vapor Sampling Analysis Summary																											
OWNER/OPERATOR	Total Active SV Samples	Total Dilutions	Total Active SV Analyses	Total Passive Soil vapor Samples																							
DOE	22	0	22	0																							
NASA	156	19	175	9																							
Rocketdyne	646	102	748	0																							
	824	121	945	9																							
Notes:																											
Includes HGS, CAL analyses (no TEG)				Includes Gore analyses, no dilutions required																							
Includes all Ogden samples at RFI sites - June 96 thru present																											
All analyses performed by Method 8260, modified for vapor																											
RFI Biotic Sampling Analysis Summary																											
OWNER/OPERATOR	Total Samples	Total Analyses	SVOC, 8270CSIM	Metals, 6010B/7471	PCBs, 1668	Dioxin, 1613B	LIPIDS																				
DOE	0	0	0	0	0	0	0																				
NASA	25	87	12	24	13	13	25																				
Rocketdyne	20	42	8	0	12	2	20																				
Total	45	129	20	24	25	15	45																				
Notes:																											
Includes all Ogden samples at RFI sites - June 96 thru present																											

**Santa Susana Field Laboratory  
RFI and CMS Projects  
Quarterly Progress Report  
EPA ID No.CAD 093365435 (Rocketdyne)**

Rocketdyne Project Manager:	Art Lenox
Ogden Project Manager:	Dixie Hambrick
Report Period:	May 16 – August 15, 2000

**1. PROGRESS MADE THIS REPORT PERIOD**

Ogden began an extended field sampling effort this period based on DTSC's comprehensive RFI review. Soil vapor and soil matrix sampling at RFI sites began June 28, 2000 and is currently in progress. Ogden collected 156 RFI samples at Rocketdyne sites during this reporting period (Table 1). DTSC was onsite during much of the field work to observe sampling protocols and select sampling locations and depths. Soil vapor analysis is being conducted onsite by a mobile laboratory provided by Centrum Analytical Laboratories. Soil matrix sample analysis is being conducted by Ceimic Laboratories, located in Rhode Island. To date, approximately 646 soil vapor (748 analyses) and 1231 soil matrix samples (2518 analyses) have been collected from Rocketdyne locations during the RFI program (Table 2).

DTSC, Rocketdyne, and Ogden met several times this period at the SSFL to review results of the RFI sampling, discuss shallow groundwater characterization, observe field sampling activities, and collect split samples. Meetings and site visits were conducted on May 18, 22, 25, and 26; June 2, 8, 9, 14, and 26; July 6, 7, 10, 11, 13, 14, 18, 19, 20, 21, 24, 25, 26, and 28; and August 1, 3, 4, 9, and 10. These meetings are part of an ongoing, comprehensive review process with DTSC to describe site activities, soil and groundwater sampling results, and review findings at each Solid Waste Management Unit (SWMU) and Area of Concern (AOC) at the SSFL. This review includes SWMUs and AOCs identified in the 1996 RFI Work Plan and its amendments, the 1994 RCRA Facility Assessment Report, and the 1997 USEPA aerial photographic review. Rocketdyne sites reviewed to date include:

- SWMU 4.1 - Old B-1 Area
- SWMU 4.7 – Component Test Laboratory III (CTL-III)
- SWMU 4.12 – Laser Engineering Test Facility (LETf) / Component Test Laboratory (CTL-I)
- SWMU 4.14 – Canyon Area
- SWMU 4.15 – Bowl Area
- SWMU 4.16 – R-1 Pond
- SWMU 4.17 – Perimeter Pond
- Area I AOC – Component Test Laboratory V (CTL-V)

RFI Quarterly Progress Report  
EPA No. CAD093365435 (Areas I, III and IV)  
May 16 – August 15, 2000

- Area I AOC – Happy Valley
- SWMUs 6.1, 6.2, 6.3, AOC – Engineering Chemistry Laboratory
- SWMU 6.8 – Silvernale Reservoir
- SWMU 6.9 – Environmental Engineering Laboratory
- SWMU 7.8 – New Conservation Yard
- SWMU 7.9 – ESADA
- SWMU 7.10 – Building 005, Process Development Unit
- Area IV AOC – Pond Sediment Stockpile Area
- Area IV AOC – B008 Warehouse Leach Field
- Area IV AOC – B011 Leach Field

Validation of recent soil sampling data and program quality assurance review of soil sampling data collected prior to December 1999 are ongoing.

Work continued this period on the final report for the Happy Valley (Area I AOC) Interim Measure.

The draft RFI work plan addendum amendment (WPAA) was prepared and reviewed by DTSC. The draft WPAA was revised based on DTSC's comments and provided for DTSC's approval prior to beginning field work June 28, 2000.

A preliminary draft Shallow Zone Groundwater Investigation Work Plan was prepared by Ogden and discussed with DTSC on June 28, 2000. Additional meetings to finalize the scope of the investigation are ongoing.

The final draft of the Surficial Media Operable Unit SRAM Work Plan was approved by DTSC June 5, 2000. Work began preparing an outline for the Chatsworth Formation Operable Unit SRAM. A meeting was held with DTSC risk assessors and chemists on July 21, 2000 to discuss the scope of interim RFI data deliverables for review.

Implementation of the Ecological Validation Sampling and Analysis Plan (SAP) began this period. Field sampling was conducted at the Rocketdyne CTL-III and Silvernale sites between May 22 and August 4, 2000. In addition, soil samples were collected for PCB congener analysis at the Rocketdyne CTL-V site to support human health and ecological risk assessments. Ecological validation samples are included in the sampling summaries provided in Tables 1 and 2. Sample analysis of biotic samples is ongoing.

A meeting was held May 18, 2000 with DTSC, Ventura County Environmental Health Department, and the Los Angeles Regional Water Control Board regarding the Area I Landfill (SWMU 4.2). At this meeting, it was decided that DTSC would oversee the characterization phase of the upcoming work, with input from Ventura County and the Regional Board. Further actions and regulatory oversight will depend on findings of the characterization.

RFI Quarterly Progress Report  
EPA No. CAD093365435 (Areas I, III and IV)  
May 16 – August 15, 2000

## **2. SUMMARY OF FINDINGS**

Preliminary results for soil and/or sediment samples collected this period indicate elevated polychlorinated biphenyls (PCBs) at the Silvernale Reservoir site (SWMU 6.9). Elevated concentrations of VOCs in soil vapor were not detected in the samples collected this period from Rocketdyne sites.

## **3/4 SUMMARY OF PROBLEMS/ACTIONS TAKEN**

Boeing is continuing to monitor the State of Arizona audit evaluation of the Columbia Analytical Services (CAS) laboratory. CAS has provided analytical support for the RFI. Boeing, Ogden, and DTSC's Hazardous Materials Laboratory met on July 21, 2000 to discuss preliminary CAS audit findings and implications for the RFI. Further discussion of potential corrective actions is pending completion of the audit.

## **5. PROJECT ACTIVITY NEXT PERIOD**

Boeing will be involved with the following RFI activities during the next period:

- Continue comprehensive review of all SWMUs and AOCs with DTSC, including review of the USEPA Aerial Report findings, historical and preliminary RFI soil data, groundwater data, and conducting visits to inspect site conditions
- Conduct RFI site sampling
- Review ecological sample results
- Prepare Shallow Zone Groundwater Investigation RFI Work Plan Amendment and implement field work
- Discuss program quality assurance and laboratory performance with DTSC
- Discuss RFI report outline with DTSC
- Revise the Area I Landfill (SWMU 4.2) Work Plan
- Begin preliminary risk and data deliverables for DTSC review

## **6. PERSONNEL CHANGES**

None.

## **7. SUMMARY OF CONTACTS**

None.

RFI Quarterly Progress Report  
EPA No. CAD093365435 (Areas I, III and IV)  
May 16 – August 15, 2000

**8. TREATMENT SYSTEM EFFECTIVENESS**

No soil remediation treatment systems are in place or operational at this time.

**9. DATA REPORTS SUBMITTED**

RFI Work Plan Addendum Amendment, Santa Susana Field Laboratory, Ventura County, California. *DTSC Review Copy*. (Ogden, May 2000).

Table 1  
Rocketdyne Sampling Summary  
May 16 - August 15, 2000

UNIT	Facility	MATRIX	Total Samples	Total Analyses	VOC, 8260B - vapor	VOC, 8260B	TPH, 8015/BM	SVOC, 8270CSIM	SVOC, 8270C	Metals, 6010B/7471	Mercury, 7471A	Silver, 7761	Hex. Cr, 7196A	Fluoride, 340.2	ANIONS, 300	PH, 9040B	PH, 9045C	PCBs, 8082	PCBs, 1668	Perchlorate, 300M	Dioxin, 8290	Dioxin, 1613B	Ordnance, SW8330	LIPIDS	TOC
AREA I AOC - CTL-V	CTL-V	S	13	28	0	0	5	2	2	4	0	0	0	0	0	0	4	9	1	0	0	0	0	1	0
AREA I AOC - CTL-V	CTL-V	V	8	8	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AREA IV AOC-SRE	SRE	S	13	29	0	4	4	4	1	6	4	0	0	0	0	0	6	0	0	0	0	0	0	0	0
		V	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AREA IV AOC - B011	B011	V	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWMU 4.1	B-1	V	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWMU 4.3/4	IEL	V	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWMU 4.14	Canyon Area	S	3	6	0	0	1	0	0	1	0	0	0	0	0	0	1	2	0	0	1	0	0	0	0
SWMU 4.15	Bowl Area	S	11	21	0	0	6	2	0	4	0	0	0	0	0	0	4	1	0	0	4	0	0	0	0
SWMU 4.15	Bowl Area	W	1	4	0	0	1	1	0	1	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Bowl Area	V	9	9	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWMU 4.16	Area 1 Reservoir (R-1)	S	4	18	0	0	4	2	0	4	0	0	0	0	0	0	4	2	0	0	2	0	0	0	0
SWMU 4.7	CTL-III	S	7	12	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	1	5	0	0	0
SWMU 4.7	CTL-III	B	8	24	0	0	0	8	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	8	0
SWMU 4.7	CTL-III	V	19	19	19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWMU 5.7	HWSA Waste Coolant Tank	S	2	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWMU 6.4	Compound A	S	1	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0
SWMU 6.5	STL-IV	S	10	19	0	5	5	5	0	2	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0
SWMU 6.5	STL-IV	W	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWMU 6.5	STL-IV	V	3	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWMU 6.8	Silvernale Reservoir	S	12	23	0	0	1	0	1	2	0	0	0	0	0	0	2	8	5	0	0	0	0	0	4
SWMU 6.8	Silvernale Reservoir	B	12	24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0	0	0	0	12	0
SWMU 6.8	Silvernale Reservoir	W	3	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0
SWMU 7.8	New Conservation Yard	S	4	5	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	3	0	0	0	0
TOTAL			156	273	51	12	27	31	4	25	4	1	0	0	0	0	23	23	21	1	12	13	0	21	4
S = Soil	V = Vapor																								
W = Water	B = Biota																								
Note - includes QA samples (water, soil, vapor); does not include samples on hold.																									

Table 2  
RFI Sampling Summary  
May 1996 - August 2000

RFI Soil Matrix Sampling Analysis Summary																												
OWNER/OPERATOR		Total Samples	Total Analyses	VOA, 8260	TPH, 8015	VOA, 8021A	SVOA, 8270SIM	SVOA, 8270	Metals, 6010/700	Mercury, 7471A	Silver, 7761	Hex Cr, 7196	Fluoride, 340.2	ANIONS, 300	PH, 9040/9045	PCBs, 8080/8082	PCBs, 1668	Form, ASTM D19	Perchlorate, 300M	Tributyl Sn	Dioxin, 8290	Dioxin, 1613B	Hydrazine	Ordinance, 8330	SPLP, 1312	Asbestos	LIPIDS	TOC
DOE		169	532	2	97	50	56	10	94	0	0	2	17	7	77	25	1	0	28	0	35	0	0	0	6	25	0	0
NASA		586	932	28	335	153	74	18	111	0	0	10	10	10	55	37	8	16	0	0	47	11	0	1	5	0	0	3
Rocketdyne		1231	2518	71	490	323	285	44	399	4	1	42	87	84	323	41	9	95	61	1	41	5	7	61	39	0	1	4
Total		1986	3982	101	922	526	415	72	604	4	1	54	114	101	455	103	18	111	89	1	123	16	7	62	50	25	1	7
Notes:																												
Soil, water only - no vapor		No Eco Samples																										
No Task 203 samples (LUFT)		No background samples																										
No Bell Canyon samples		No samples on hold																										
Includes all Ogden samples at RFI sites - June 96 thru present																												
RFI Soil Vapor Sampling Analysis Summary																												
OWNER/OPERATOR	Total Active SV Samples	Total Dilutions	Total Active SV Analyses	Total Passive Soil vapor Samples																								
DOE	22	0	22	0																								
NASA	156	19	175	9																								
Rocketdyne	646	102	748	0																								
	824	121	945	9																								
Notes:																												
Includes HGS, CAL analyses (no TEG)				Includes Gore analyses, no dilutions required																								
Includes all Ogden samples at RFI sites - June 96 thru present																												
All analyses performed by Method 8260, modified for vapor																												
RFI Biotic Sampling Analysis Summary																												
OWNER/OPERATOR	Total Samples	Total Analyses	SVOC, 8270CSIM	Metals, 6010B/7471	PCBs, 1668	Dioxin, 1613B	LIPIDS																					
DOE	0	0	0	0	0	0	0																					
NASA	25	87	12	24	13	13	25																					
Rocketdyne	20	42	8	0	12	2	20																					
Total	45	129	20	24	25	15	45																					
Notes:																												
Includes all Ogden samples at RFI sites - June 96 thru present																												

**Santa Susana Field Laboratory  
RFI and CMS Projects  
Quarterly Progress Report  
EPA ID No. CA1800090010 (NASA)**

Rocketdyne Project Manager:	Art Lenox
Ogden Project Manager:	Dixie Hambrick
Report Period:	May 16 – August 15, 2000

**1. PROGRESS MADE THIS REPORT PERIOD**

Ogden began an extended field sampling effort this period based on DTSC's comprehensive RFI review. Soil vapor and soil matrix sampling at RFI sites began June 28, 2000 and is currently in progress. Ogden collected 96 RFI samples at NASA sites during this reporting period (Table 1). DTSC was onsite during much of the field work to observe sampling protocols and select sampling locations and depths. Soil vapor analysis is being conducted onsite by a mobile laboratory provided by Hydrogeospectrum/Centrum Analytical Laboratories. Soil matrix sample analysis is being conducted by Ceimic Laboratories, located in Rhode Island. To date, approximately 156 soil vapor (175 analyses) and 586 soil matrix samples (932 analyses) have been collected from NASA locations during the RFI program (Table 2).

DTSC, Rocketdyne, and Ogden met several times this period at the SSFL to review results of the RFI sampling, discuss shallow groundwater characterization, observe field sampling activities, and collect split samples. Meetings and site visits were conducted on May 18, 22, 25, and 26; June 2, 8, 9, 14, and 26; July 6, 7, 10, 11, 13, 14, 18, 19, 20, 21, 24, 25, 26, and 28; and August 1, 3, 4, 9, and 10. These meetings are part of an ongoing, comprehensive review process with DTSC to describe site activities, soil and groundwater sampling results, and review findings at each Solid Waste Management Unit (SWMU) and Area of Concern (AOC) at the SSFL. This review includes SWMUs and AOCs identified in the 1996 RFI Work Plan and its amendments, the 1994 RCRA Facility Assessment Report, and the 1997 USEPA aerial photographic review. NASA sites reviewed to date include:

- SWMUs 4.5 and 4.6 – LOX Area
- SWMU 5.2 – Expendable Launch Vehicle (ELV) Area
- SWMU 5.5 and AOC – Building 204 Area
- SWMU 5.6 – Area II Former Ash Pile
- SWMU 5.7 – Hazardous Waste Storage Area Coolant Tank
- SWMUs 5.9, 5.10, 5.11 – Alfa Area
- SWMU 5.12 – Alfa/Bravo Skim Pond
- SWMUs 5.13, 5.14, 5.15 – Bravo Area
- SWMUs 5.18, 5.19 – Coca Area

RFI Quarterly Progress Report  
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- SWMUs 5.20, 5.21, 5.22 – Propellant Load Facility (PLF) Area
- SWMUs 5.23, 5.24, 5.25 – Delta Area
- SWMU 5.26 – R2A/R2B Ponds
- Area II AOC – Coca/Delta Fuel Farm
- Area II AOC – Alfa/Bravo Fuel Farm
- Area II AOC – Storable Propellant Area
- Area II AOC – Building 515 Sewage Treatment Plant Clarifier and Leach Field Area

Validation of recent soil sampling data and program quality assurance review of all soil sampling data collected prior to December 1999 are ongoing.

The draft RFI work plan addendum amendment (WPAA) was prepared and reviewed by DTSC. The draft WPAA was revised based on DTSC's comments and provided for DTSC's approval prior to beginning field work June 28, 2000.

A preliminary draft Shallow Zone Groundwater Investigation Work Plan was prepared by Ogden and discussed with DTSC on June 28, 2000. Additional meetings to finalize the scope of the investigation are ongoing.

The final draft of the Surficial Media Operable Unit SRAM Work Plan was approved by DTSC June 5, 2000. Work began preparing an outline for the Chatsworth Formation Operable Unit SRAM. A meeting was held with DTSC risk assessors and chemists on July 21, 2000 to discuss the scope of interim RFI data deliverables

Implementation of the Ecological Validation Sampling and Analysis Plan (SAP) began this period. Field sampling was conducted at the NASA Bravo and R2 Pond sites between May 22 and August 4, 2000. Ecological validation samples are included in the sampling summaries provided in Tables 1 and 2. Sample analysis of biotic samples is ongoing.

A meeting was held May 18, 2000 with DTSC, Ventura County Environmental Health Department, and the Los Angeles Regional Water Control Board regarding the Area II Landfill (SWMU 5.1). At this meeting, it was decided that DTSC would oversee the characterization phase of the upcoming work, with input from Ventura County and the Regional Board. Further actions and regulatory oversight will depend on findings of the characterization.

## **2. SUMMARY OF FINDINGS**

Mercury was not detected in the surface water (seep) samples collected north of ELV (SWMU 5.2) last period. Preliminary results for soil and/or sediment samples collected this period indicate elevated dioxins at the R2A/R2B Pond site (SWMU 5.26). Slightly elevated concentrations of VOCs in soil vapor were detected in step-out samples collected this period at the ELV site.

### **3/4 SUMMARY OF PROBLEMS/ACTIONS TAKEN**

Boeing is continuing to monitor the State of Arizona audit evaluation of the Columbia Analytical Services (CAS) laboratory. CAS has provided analytical support for the RFI. Boeing, Ogden, and DTSC's Hazardous Materials Laboratory met on July 21, 2000 to discuss preliminary CAS audit findings and implications for the RFI. Further discussion of potential corrective actions is pending completion of the audit.

### **5. PROJECT ACTIVITY NEXT PERIOD**

Boeing will be involved with the following RFI activities during the next period:

- Continue comprehensive review of all SWMUs and AOCs with DTSC, including review of the USEPA Aerial Report findings, historical and preliminary RFI soil data, groundwater data, and conducting visits to inspect site conditions
- Conduct RFI site sampling
- Review ecological sample results
- Prepare Shallow Zone Groundwater Investigation RFI Work Plan Amendment and implement field work
- Discuss program quality assurance and laboratory performance with DTSC
- Discuss RFI report outline with DTSC
- Revise the Area II Landfill (SWMU 5.1) Work Plan
- Begin preliminary risk and data deliverables for DTSC review

### **6. PERSONNEL CHANGES**

None.

### **7. SUMMARY OF CONTACTS**

None.

### **8. TREATMENT SYSTEM EFFECTIVENESS**

No soil remediation treatment systems are in place or operational at this time.

### **9. DATA REPORTS SUBMITTED**

RFI Quarterly Progress Report  
EPA No. CA1800090010 (Area II)  
May 16 – August 15, 2000

RFI Work Plan Addendum Amendment, Santa Susana Field Laboratory, Ventura County,  
California. *DTSC Review Copy*. (Ogden, May 2000).

Table 1  
NASA Sampling Summary  
May 16 - August 15, 2000

UNIT	Facility	MATRIX	Total Samples	Total Analyses	VOC, 8260B - vapor	VOC, 8260B	TPH, 8015/BM	SVOC, 8270CSIM	SVOC, 8270C	Metals, 6010B/7471A	Mercury, 7471A	Silver, 7761	Hex. Cr, 7196A	Flouride, 340.2	ANIONS, 300	PH, 9040B	PH, 9045C	PCBs, 8082	PCBs, 1668	Perchlorate, 300M	Dioxin, 8290	Dioxin, 1613B	Ordinance, SW8330	LIPIDS	TOC
AREA II AOC - C/D FF	Coca/Delta FF	S	30	46	0	0	2	12	1	12	0	0	0	0	0	0	0	0	0	0	19	0	0	0	0
AREA II AOC - C/D FF	Coca/Delta FF	W	2	11	0	2	0	1	0	1	0	0	1	1	1	1	0	1	0	0	1	0	1	0	0
SWMU 4.5	LOX	V	2	2	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWMU 5.2	ELV	V	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWMU 5.5	B204	V	6	6	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWMU 5.13/14/15	Bravo Area	S	6	14	0	0	0	0	0	5	0	0	0	0	0	0	0	4	5	0	0	0	0	0	0
SWMU 5.13/14/15	Bravo Area	B	13	39	0	0	0	0	0	12	0	0	0	0	0	0	0	0	13	0	0	1	0	13	0
SWMU 5.18	Coca Area	V	5	5	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
SWMU 5.26	R-2A/2B Ponds	S	7	24	0	2	2	5	0	5	0	0	0	0	0	0	0	0	0	0	2	5	0	0	3
SWMU 5.26	R-2A/2B Ponds	B	12	48	0	0	0	12	0	12	0	0	0	0	0	0	0	0	0	0	0	12	0	12	0
SWMU 5.26	R-2A/2B Ponds	W	8	25	0	0	0	7	0	7	0	0	0	0	0	0	0	0	3	0	2	6	0	0	0
<b>TOTAL</b>			<b>96</b>	<b>225</b>	<b>18</b>	<b>4</b>	<b>4</b>	<b>37</b>	<b>1</b>	<b>54</b>	<b>0</b>	<b>0</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>5</b>	<b>21</b>	<b>0</b>	<b>24</b>	<b>24</b>	<b>1</b>	<b>25</b>	<b>3</b>
S = Soil	V = Vapor																								
W = Water	B = Biota																								
Note - includes QA samples (water, soil, vapor); does not include samples on hold.																									

Table 2  
RFI Sampling Summary  
May 1996 - August 2000

RFI Soil Matrix Sampling Analysis Summary																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
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